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A soft, new-made pot might get out of shape by being handled; the core, with the pot on it, is, therefore, taken off the horse and carried to a quiet sheltered place, and the pot being then set on its bottom, the core is raised out, leaving the cap within, which itself parts from the pot with a little management. The lip is then made by pressing the handle of the trowel from within against the edge of the pot, having placed the fore-finger and thumb, one on each side of the edge, to limit the action of the pressure.

It is by no means an unnecessary precaution to put the new-made pot in a quiet place, for if subject to any considerable jarring before it gets dry and hard, the pot will sink and not carry its rated charge of metal.

From twenty to thirty-six melting pots, of excellent quality, may thus be made in a day.

No. II.

PREVENTION OF DRY ROT.

The large SILVER MEDAL was voted to Mr. EDWARD CAREY, R.N., for his method of Preventing Dry Rot in Ships' Timbers; a Model, illustrative of his method, has been placed in the Society's Repository.

EVERY one knows that deciduous trees are full of sap during the period which begins in early spring, and terminates with the complete expansion of the leaves.

If at this time a branch be cut off, or if a hole be bored into the trunk, an exsudation of the sap, in greater or less abundance, will follow. The bark at this time may be stripped off from the wood with ease, and in large flakes; and every part of the tree is, so to speak, bathed in moisture. A chemical analysis of sap shews it to be a watery liquor containing some sugar, mucilage, and extractive matter. In several trees, as the birch and sycamore, the sap is sufficiently copious and saccharine to furnish a fermentable liquor, from which a weak, though perfect, wine may be made; and the sugar-maple of North America produces a sap, from which sugar is annually made in considerable quantity, by boiling it down to a proper consistence. At the fall of the leaf the wood of a living tree is considerably dryer than it was in spring, and contains a less quantity of sugar and of other easily decomposable vegetable principles.

The old method of preparing oak timber for naval use appears to have been, to cut down the tree in the winter, and, after lopping the ends of the branches, to let it remain where it fell till the next summer, without stripping the bark from it. During the spring the buds in the bark, and in those sprays which had not been removed, began to vegetate and grow; and in so doing absorbed, consumed, and removed a part, probably nearly the whole, of the sap which was contained in the trunk at the time of its being felled. The imperfect condition of the roads rendered it impossible to convey heavy timber along them, except in the height of summer, so that a tree grown in the weald of Sussex, or even in the remote parts of the New Forest, often did not reach Portsmouth yard till the second year after it had been felled. Here it was stripped of its bark, and stacked either in the open

air or under cover, till, by continued exposure to a free draught of air, it was seasoned, that is, dried.

During this method of management fungous rot appears to have scarcely existed in our shipping, whether naval or mercantile.

Of late, within the last fifty years, a great increase has taken place in the navy, without a corresponding supply of oak timber of home growth; and, at the same time, the price of oak bark, for the use of the tanner, has been continually augmenting. These circumstances have led to the practice of felling timber in spring, when, from the abundance of sap, the bark is easiest stripped. But, with the removal of the bark, that vegetation which used to take place during the summer after felling, and which probably was so advantageous in seasoning the wood, is prevented. The naked wood, full of moisture, is exposed to the drying winds of spring and the heat of summer; in consequence of which it becomes shaken and injured by numerous wide clefts, occasioned by partial drying, which admit the rain, and probably also the microscopic seeds of fungi to the heart of the tree. The immense demand of our dock-yards during the last half century of almost incessant war, necessarily occasioned a diminution of the time requisite for seasoning. Hence the timber employed in the construction of shipping has probably of late years been defective, not only from insufficient drying, but also from containing sugar, mucilage, &c. the elements of sap, which, when not acted on by the living power of vegetation, are susceptible of vinous and acetous fermentation, and, finally, are resolvable into a matter in which the seeds of fungi will grow with great vigour.

To the duration of timber so circumstanced, its situation in the hull of a ship is singularly unfavourable.

The external surface, both without and within the ship, is covered with pitch, turpentine, or paint, by which the further escape of moisture (or the process of seasoning) is entirely prevented. The other surfaces of the timber are exposed, in darkness, to the action of a warm, moist, stagnant air; that is, are in a situation the most favourable for spontaneous decomposition, the rapidity of which is probably hastened tenfold by the growth of fungi, the slender roots of which penetrating into the pores of the wood occasion the destruction of its substance to proceed even more rapidly than that of its surface.

It is well known that a saturated solution of common salt is destructive of vegetable life even in those plants which flourish only in sea water, and a still weaker solution is fatal to all except the maritime plants. Hence it might be argued that ship timber would be secured from rot (as far as this is occasioned by the growth of fungi) by injecting its sap vessels with a solution of salt; and this treatment has been found efficacious in practice. Merchant vessels that convey salt in bulk are not liable to fungi. A frigate, infested with fungous rot, was accidentally sunk in the Mediterranean, and when weighed again, after remaining under water for some months, was found to be free from fungi, and so continued. In the United States of America, many vessels are built of timber quite green; and in these it is by no means uncommon to fill up the spaces between the timbers with salt; and vessels so salted, it is understood, bear a higher price in the market, on account of their greater durability.

Again, it might be argued, that oil would be efficacious, by penetrating into the sap vessels of timber, and

thus preventing the access of moisture: in confirmation of which, it may be observed that Greenland ships and other whalers are not liable to fungi. Agreeable to this theory is the practice which prevailed at Boston more than forty-five years ago, to hollow the heads of the timbers and to fill them with oil during the building of the ship.

The efficacy of oil combined with salt, may be argued from the known fact, that vessels engaged in the Newfoundland fishery, in which the salted fish are stowed in bulk, are not at all liable to fungous rot, and that the bottom of the hull of such vessels will last as long as two or three successive tops.

From these and similar facts, Mr. Carey was convinced that a mixture of oil and salt, applied to the timbers of ships, would be very efficacious in preventing rot. He also thought that it would be found useful to add to this composition a quantity of powdered charcoal, in order to increase its bulk at small expense, without introducing any noxious ingredient; and which should have the farther advantage of being so light as in the least possible degree to affect the buoyancy of the vessel.

In the year 1785 he built two schooners of eighty tons each, in the island of Cape Breton, for a Mr. Simmonds, and filled up all the spaces between the timbers and elsewhere with a composition made of the before-mentioned ingredients.

The next year he removed to the Gut of Canso, and there built, of green wood, fresh from the forest, a brig of 200 tons for a Mr. Williams, an American refugee. In this vessel, before he put on the plank sheers, he bored a hole in the centre of each timber-head, fore and aft, on each side, as deep as he could without injuring the

treenails, keeping clear of the bolts and nails. These holes he filled up with a mixture of cod or seal oil, salt, and fine charcoal, brought to as thick a consistence as would run. The spaces between the timbers and elsewhere he filled with a similar composition, but of the consistence of mortar. The way in which it was applied was this:—The space being filled with the composition, a block of wood smaller than the space was then laid on the surface and driven in: the compression forced the mixture into the smallest adjacent crevices, and the block was allowed to remain. Stops of wood were also inserted where required, in order to keep the whole in its place and prevent it from slipping down.

The brig, filled in as described, was launched, and was employed in the trade between the United States and the West Indies.

In the year 1816, Mr. Carey, on his return from the West Indies, by way of the United States, proceeded to New York, where he accidentally met with Mr. Williams, the owner of the brig. This gentleman informed Mr. Carey that the vessel which he had built for him thirty years before was then at New York, that he had had occasion to open her a short time before, and found her as sound as on the day she was launched. He invited Mr. Carey to come on board, and allowed him to bore with a half-inch auger into any parts where he suspected decomposition might have taken place. Mr. C. accordingly did so, and found every core brought out by the auger to be perfectly sound.

As Mr. Carey had no intention at that time of making public the result of his experiment, he did not request of Mr. Williams any certificate of the facts above stated: but when, in 1827, he communicated these particulars to

the Society, it was conceived by the Committee, to whom the investigation of the subject was committed, that, although they had no reason whatever to question the correctness of Mr. Carey's statement, the public would be better satisfied to have the particulars of this very interesting and important experiment substantiated by the attestation of Mr. Williams. But Mr. W. was not a resident at New York; and although Mr. Carey inserted an advertisement in the New York newspapers, as also did J. A. Yates, Esq. of Liverpool, on the part of the Society, in the newspapers both of New York and Boston, nothing could be heard of Mr. Williams till Mr. Carey learnt, some time after, that Mr. W. had died in the West Indies three years before.*

No. III.

BONE GLUE.

Mr. WALTER MACQUEEN, 8, Marine Street, Brighton, communicated to the Society a sample of Bone Glue, prepared by him in the following manner.

THE bone, previously deprived of its fat by boiling, is to be macerated in muriatic acid, diluted with twice its bulk of cold water. When the phosphate and carbonate of

* It is understood that the Navy Board at present have the spaces between the timbers in men-of-war filled with a mixture of chalk, oil, and Stockholm tar, injected into the bottom of the frame by means of a forcing pump.